

1/35

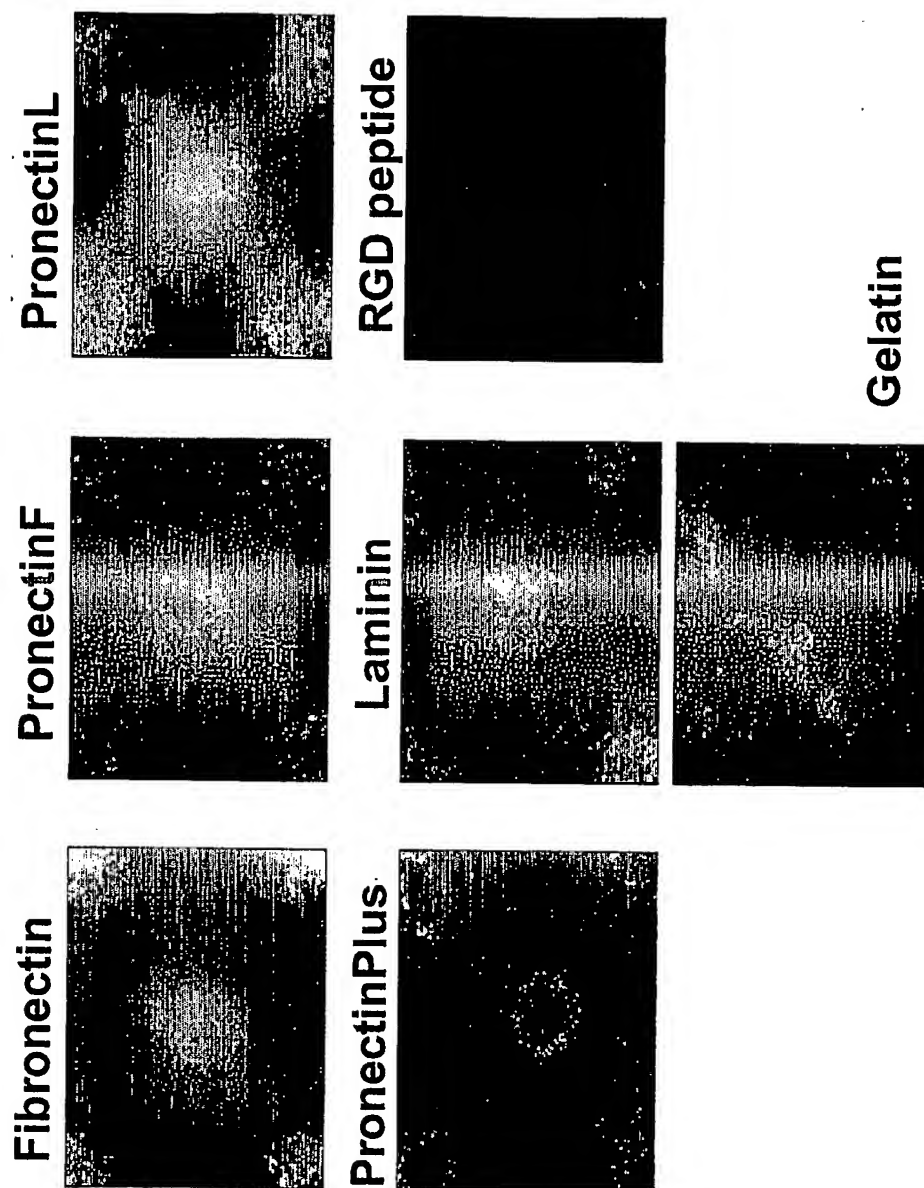
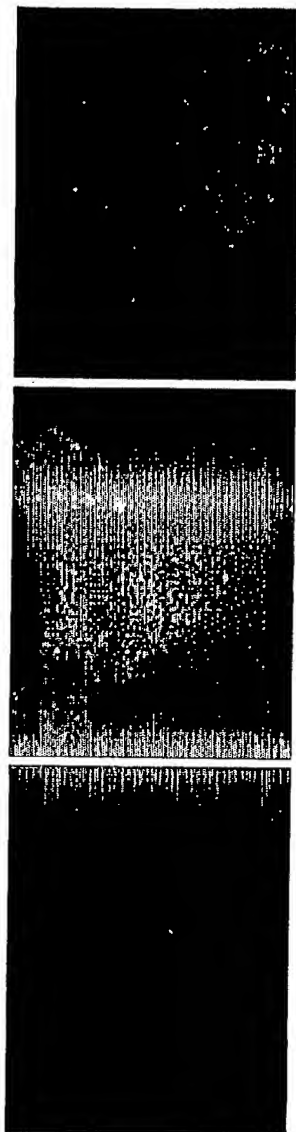


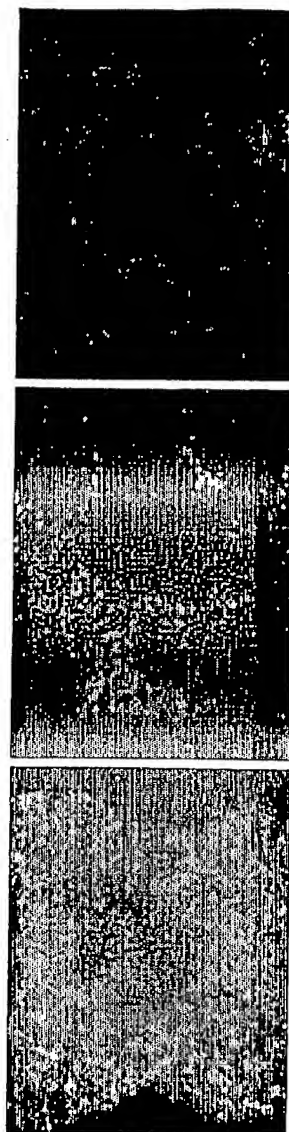
FIG.1

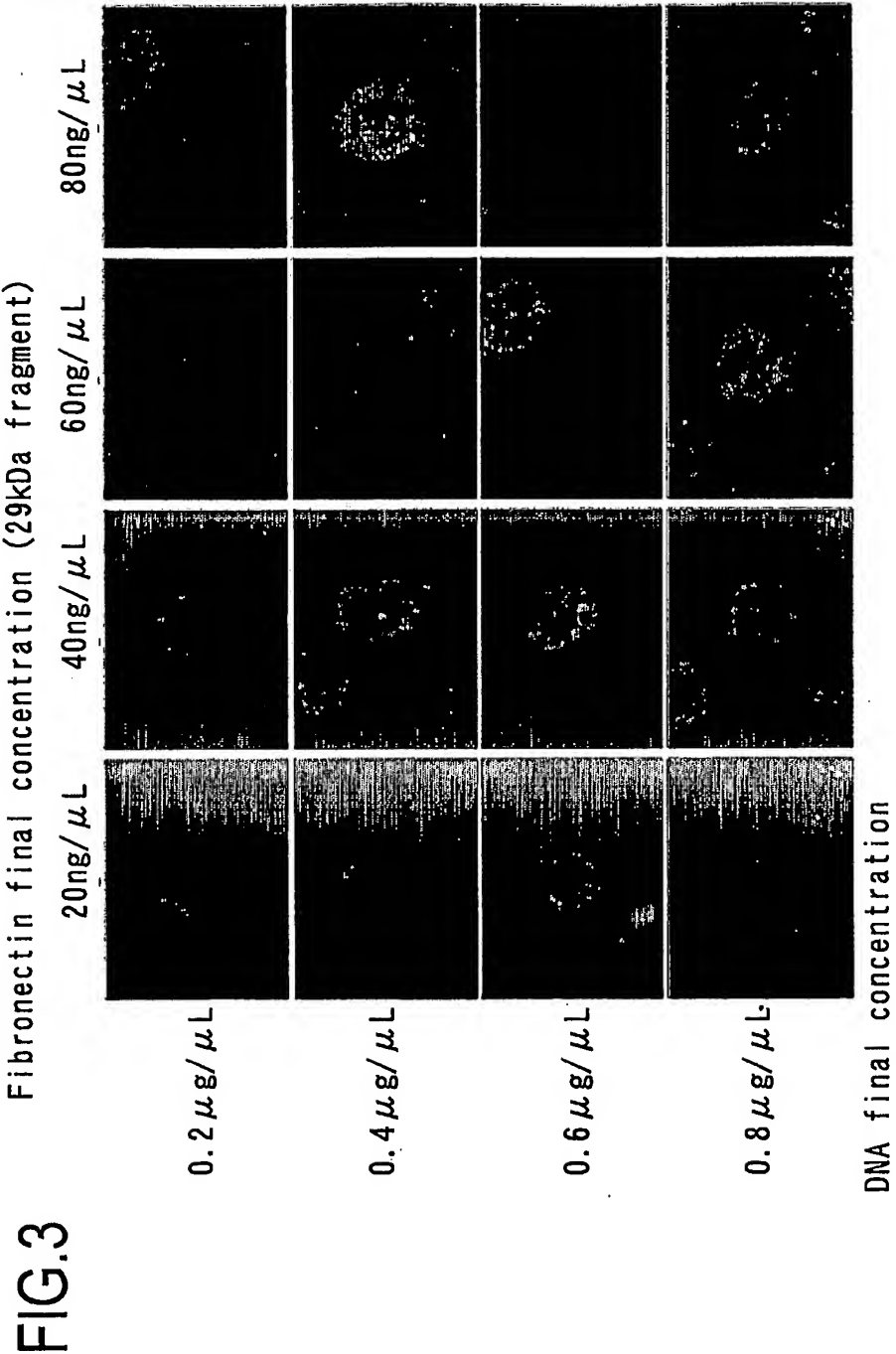
FIG.2

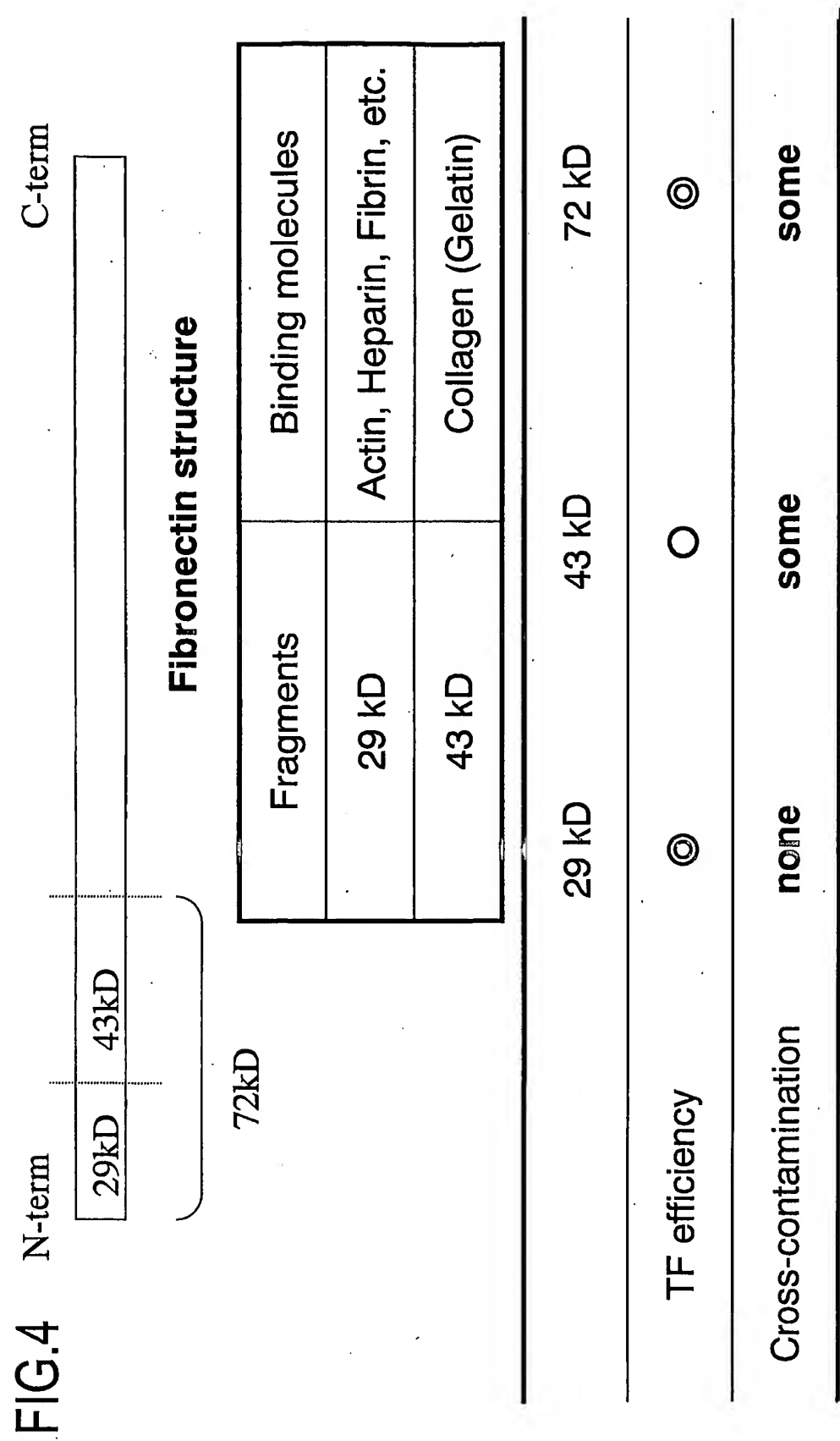
Fibronectin (43kDa fragment)

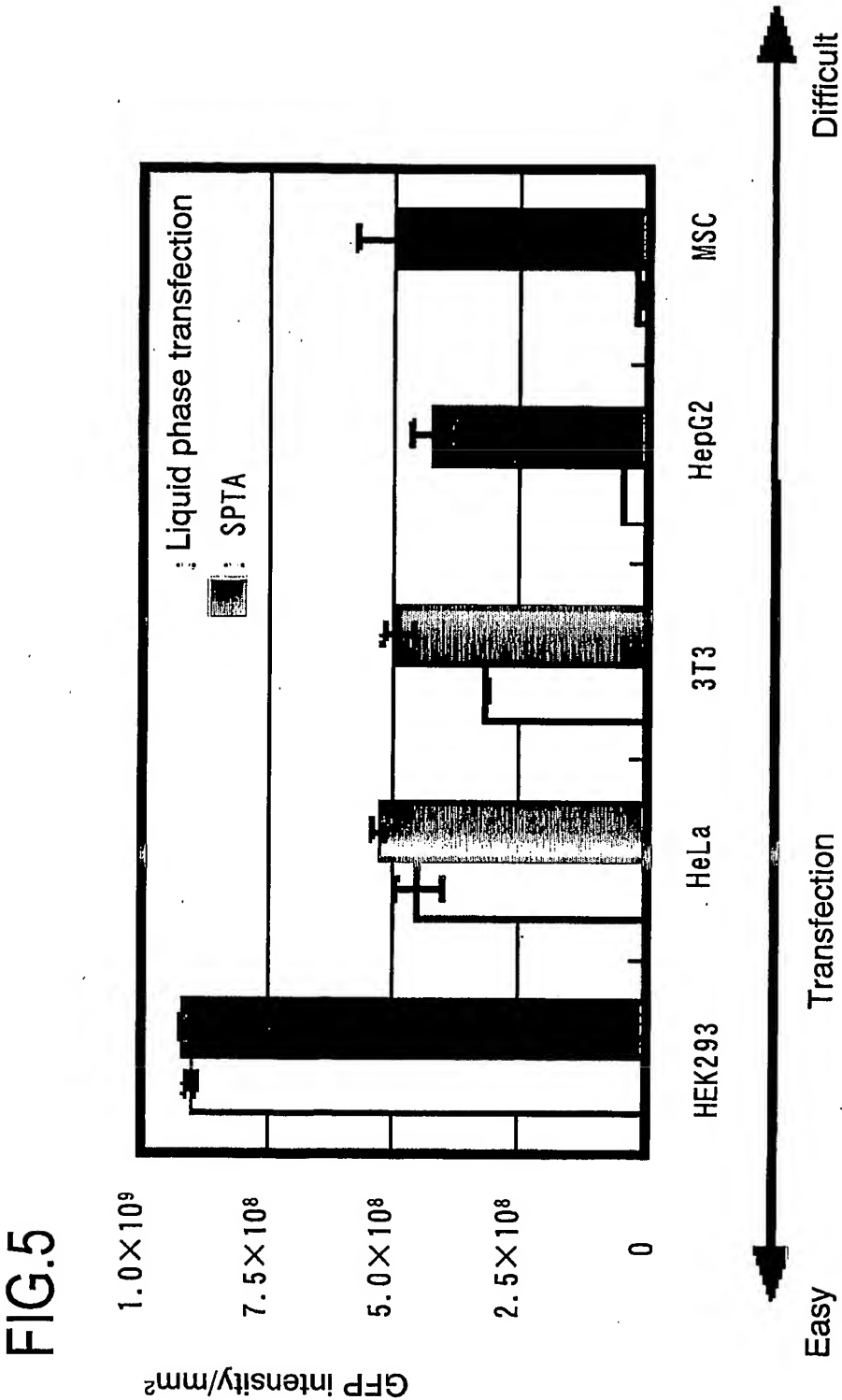


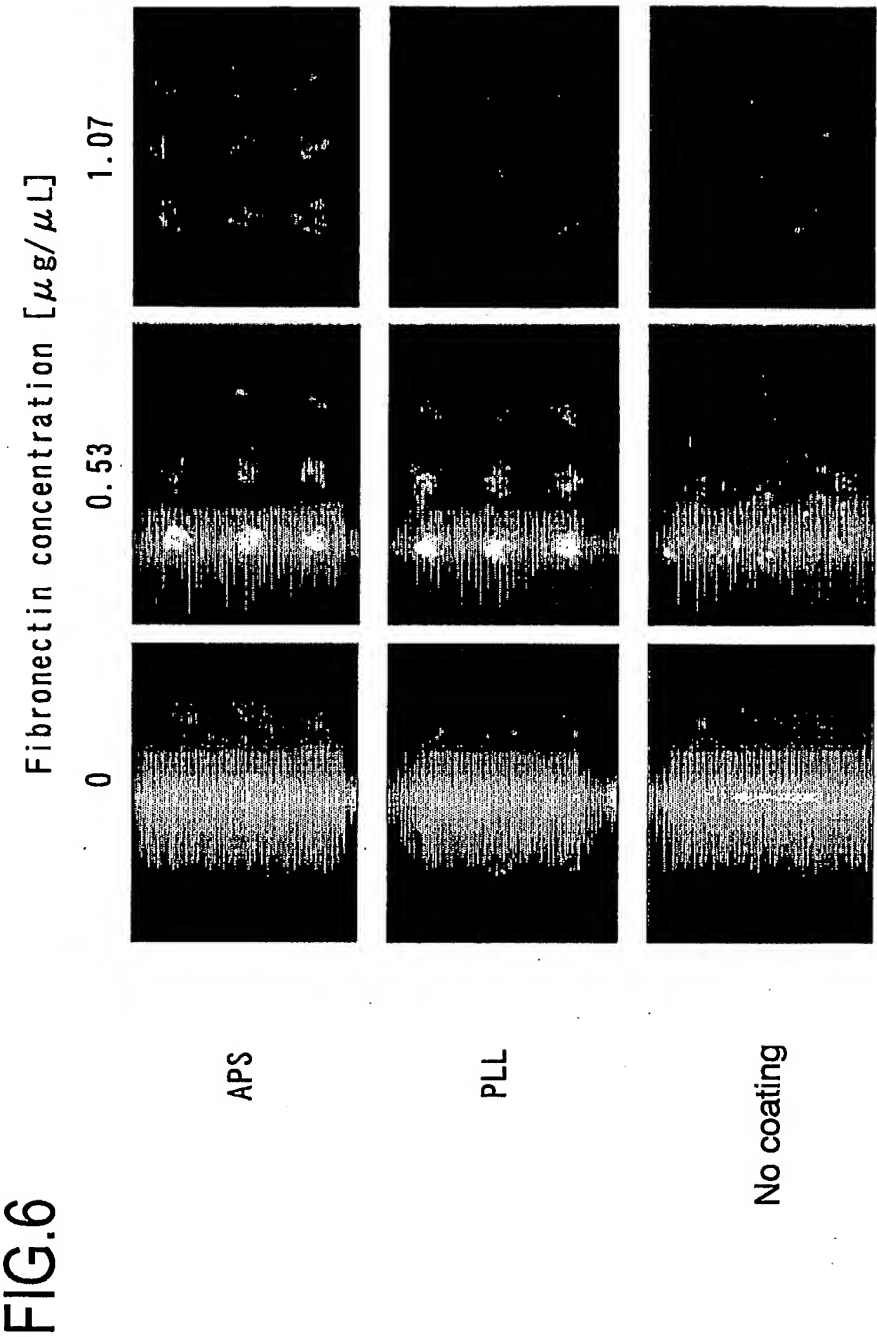
Fibronectin (72kDa fragment)

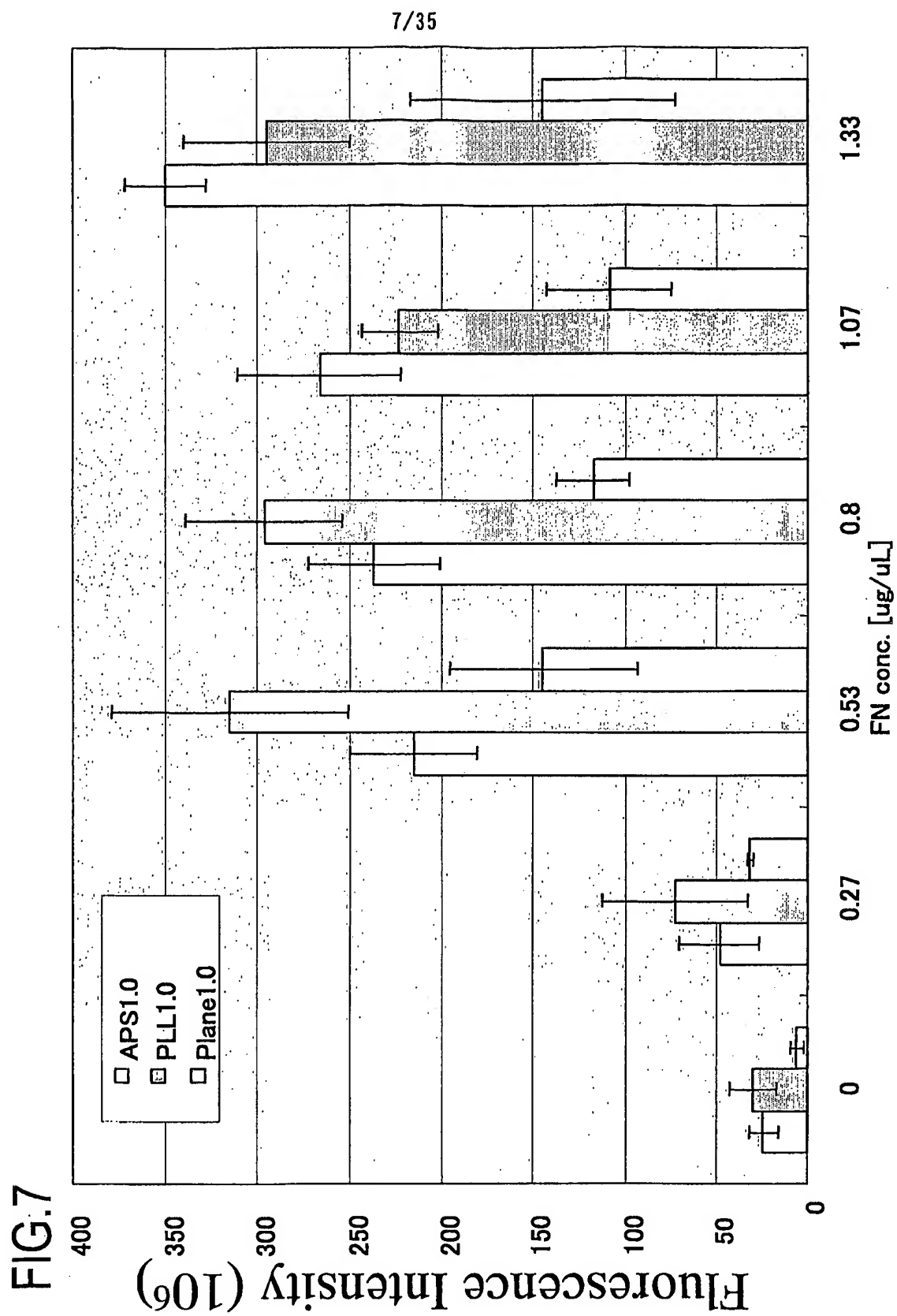






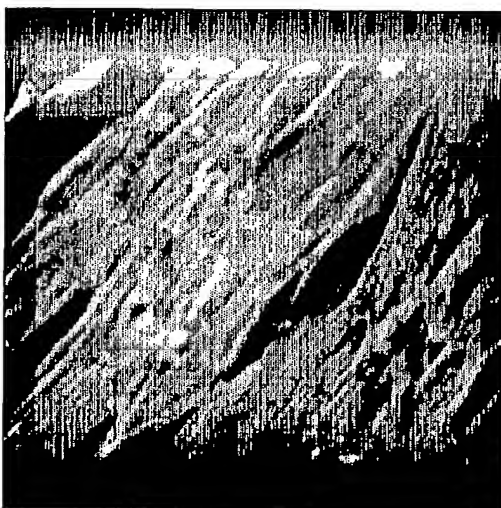




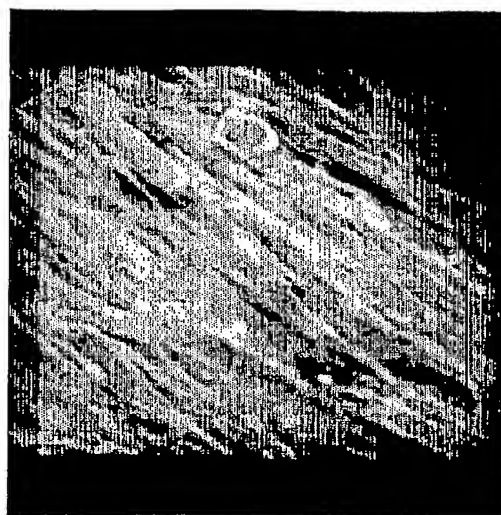


8/35

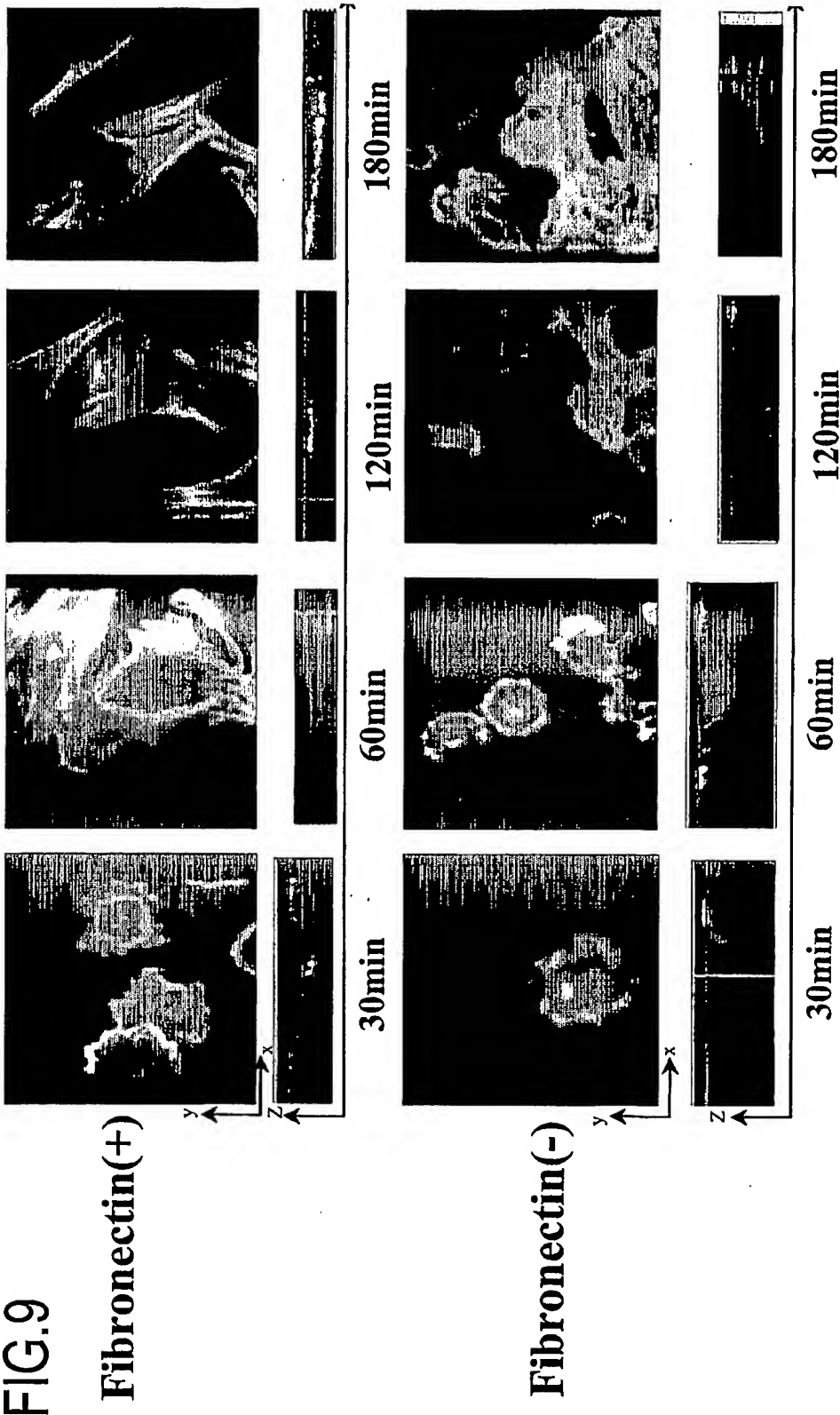
FIG.8



Fibronectin(+)



Fibronectin(-)



10/35

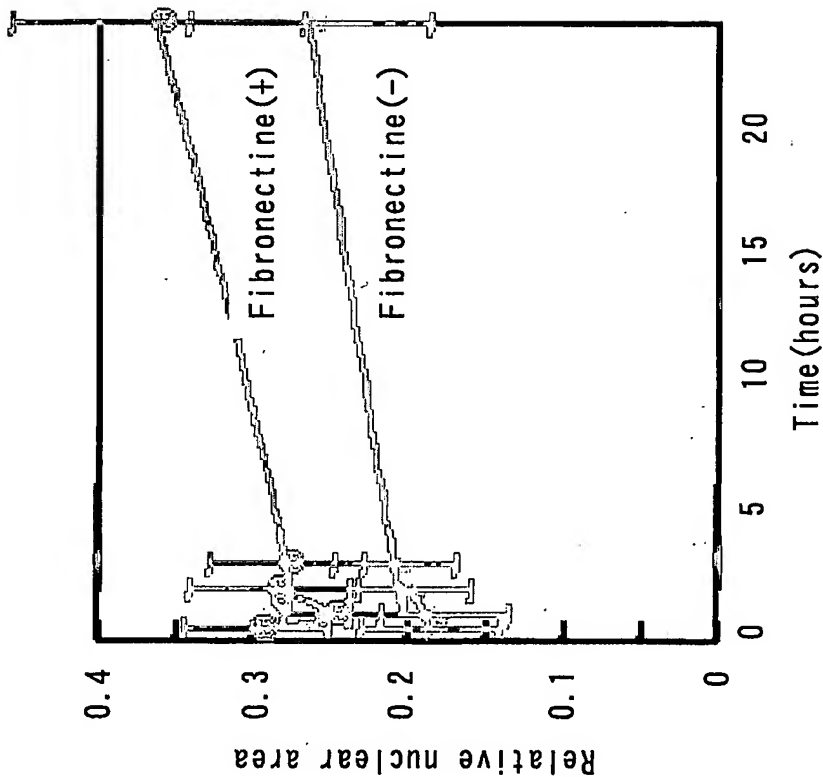


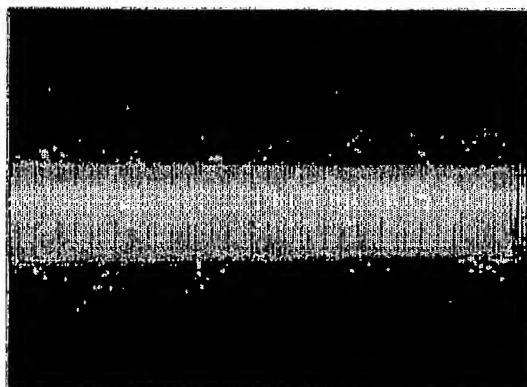
FIG.10

11/35

FIG.11



FIG.12



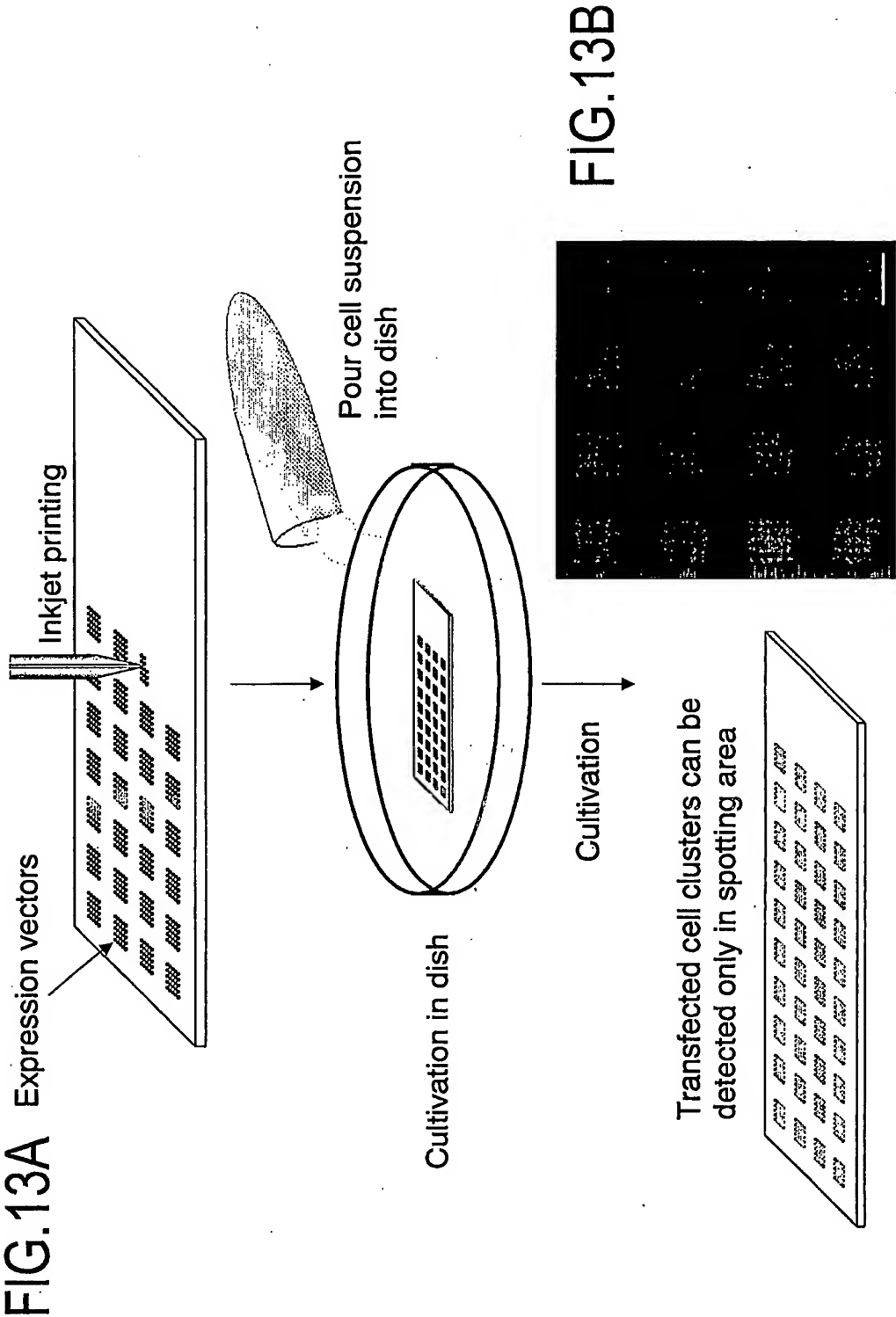
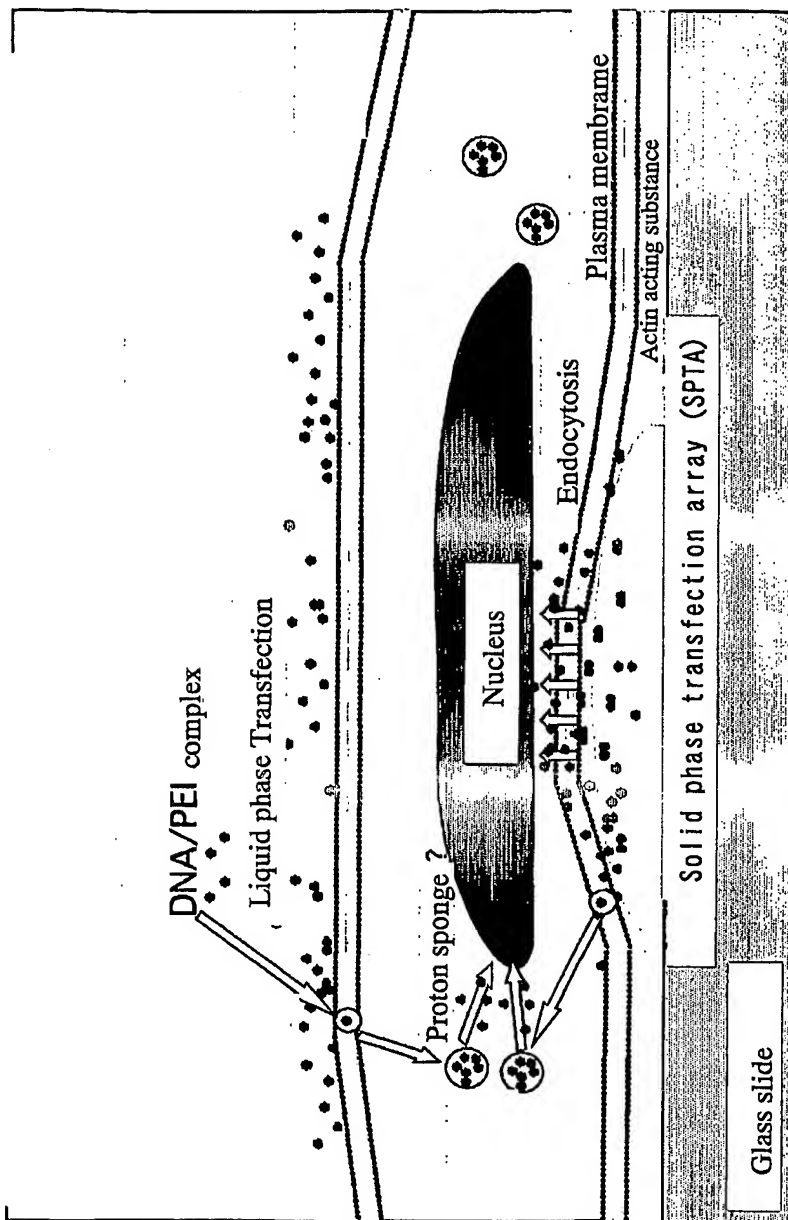
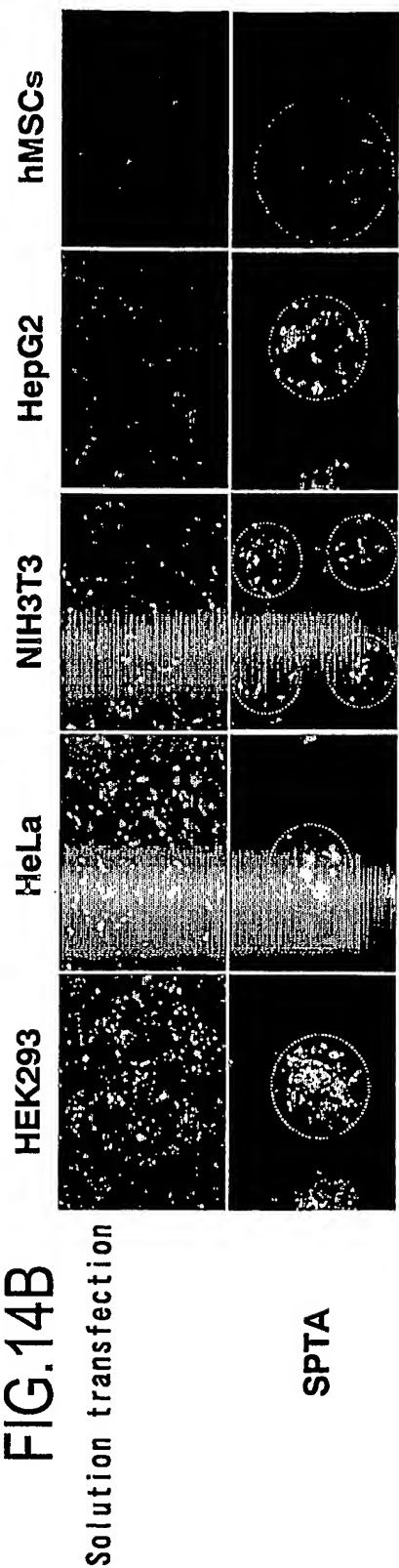
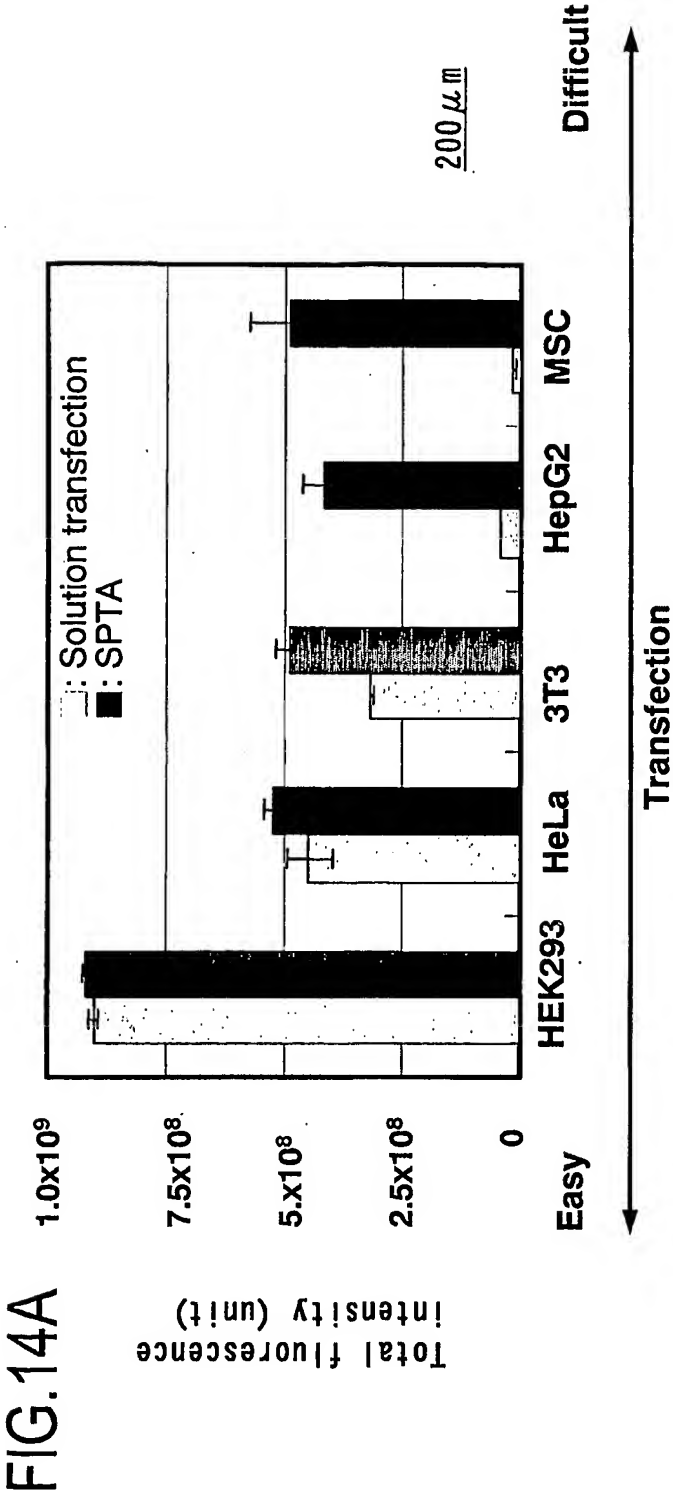


FIG.13C





15/35

FIG.14C

Solid-Phase Transfection Method

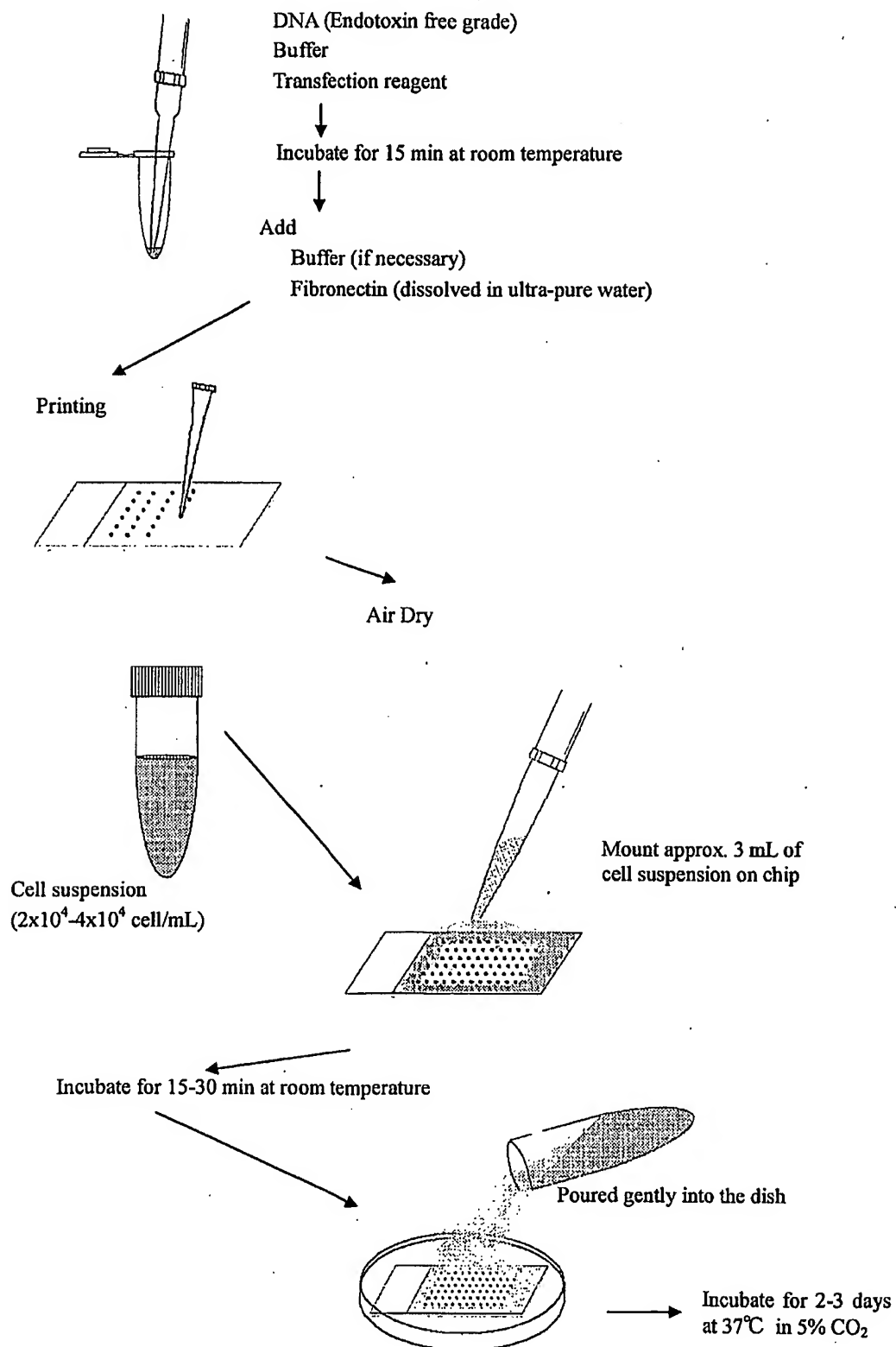


FIG.14D

16/35

For HEK293

DMEM (serum free)	9.5 uL
Plasmid DNA (1mg/mL)	1.5 uL
TransFast (1mg/mL)	9.0 uL
DMEM (serum free)	5.0 uL
Fibronectin (4mg/mL)	5.0 uL
Final volume	30.0 uL

Scheme for HEK293

1.5mL micro-tube
 ↓ ←DMEM
 ↓ ←Plasmid DNA
 mix Incubate for 2-3 days
 ↓ ←TransFast at 37°C in 5% CO₂
 mix completely and incubate for 15 min at RT
 ↓ ←DMEM
 ↓ ←Fibronectin
 mix completely
 ↓
 ready to print

For HeLa, NIH3T3-3, HepG2

DMEM (serum free)	14.5 uL
Plasmid DNA (1mg/mL)	1.5 uL
Lipofectamine2000	4.5 uL
DMEM (serum free)	5.0 uL
Fibronectin (4mg/mL)	5.0 uL
Final volume	30.0 uL

Scheme for HeLa, NIH3T3-3, and HepG2

1.5mL micro-tube
 ↓ ←DMEM
 ↓ ←Plasmid DNA
 mix
 ↓ ←Lipofectamine2000
 mix completely and incubate for 15 min at RT
 ↓ ←DMEM
 ↓ ←Fibronectin
 mix completely
 ↓
 ready to print

For hMSCs

	N/P=5	N/P=10	N/P=20	
DMEM (serum free)	12.75	12.0	10.5	uL
Plasmid DNA (1mg/mL)	1.5	1.5	1.5	uL
JetPEI (x4) conc.	0.75	1.5	3.0	uL
Fibronectin (4mg/mL)	5.0	5.0	5.0	uL
Final volume	20.0	20.0	20.0	uL

Scheme for hMSCs

1.5mL micro-tube
 ↓ ←DMEM
 ↓ ←Plasmid DNA
 mix
 ↓ ←jetPEI
 mix completely and incubate for 15 min at RT
 ↓ ←Fibronectin
 mix completely
 ↓
 ready to print

17/35

FIG.15A

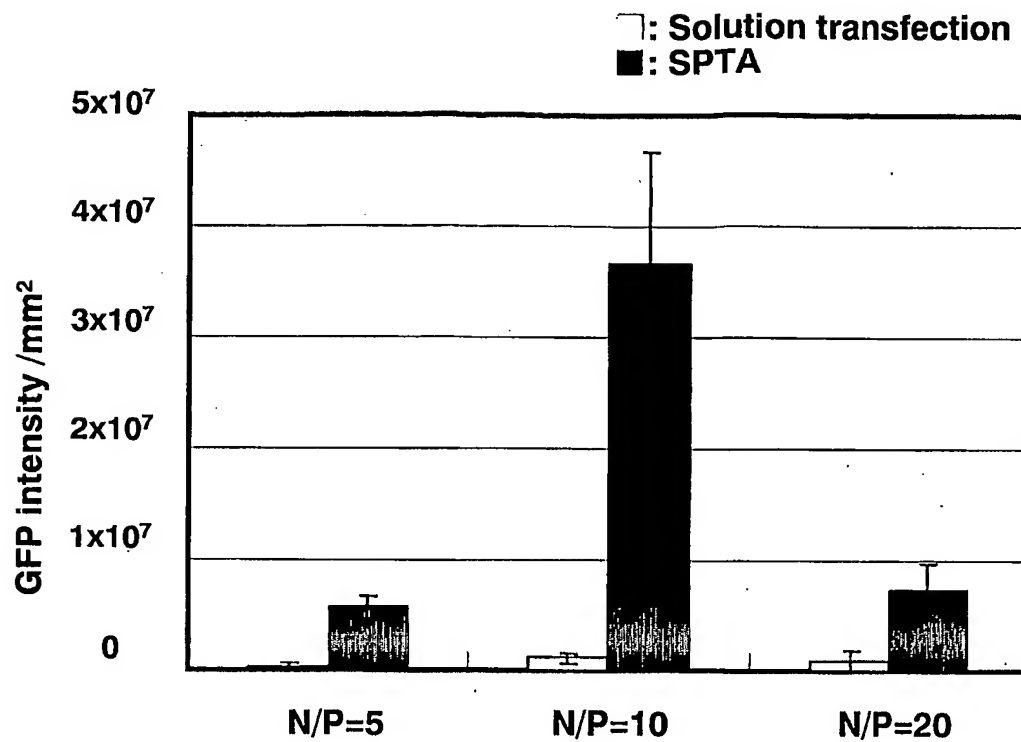
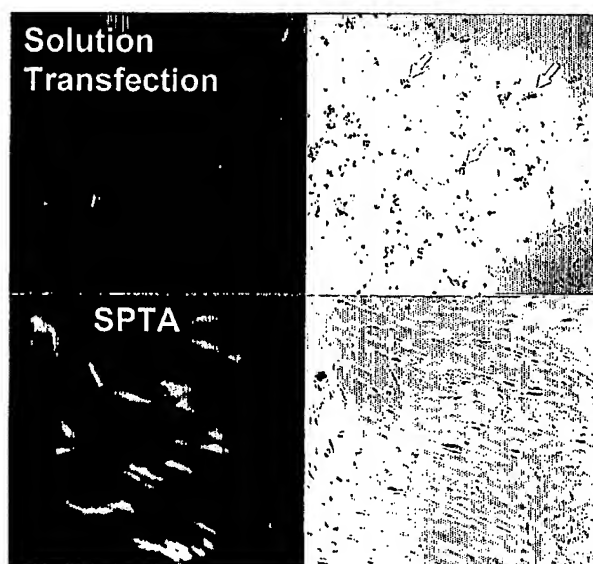


FIG.15B



N/P=10

18/35

FIG.16B

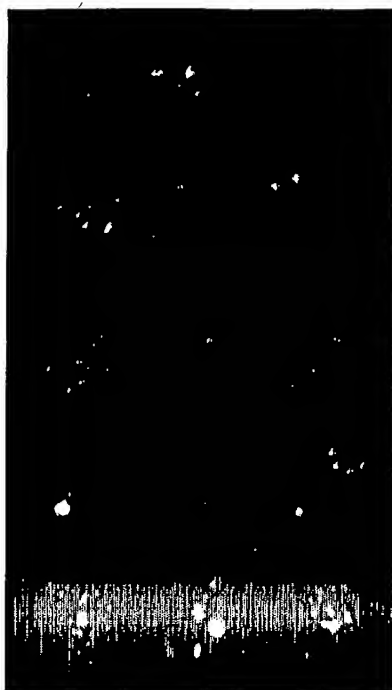
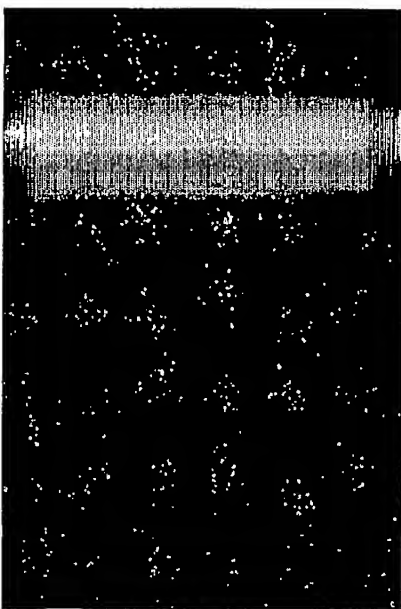


FIG.16A



19/35

FIG.16C

Number of adherent cells						
	Time(min)					
	0	5	10	15	20	30
APS	235	220	202	157	170	162
APS+gelatin	212	206	184	145	156	183
APS+fibronectin	229	198	183	132	100	85
APS+pronectin L	257	170	126	94	71	47
PLL	231	221	205	162	168	159
PLL+gelatin	218	208	186	151	146	156
PLL+fibronectin	225	174	162	129	98	79
PLL+pronectin L	214	151	132	90	76	50
MAS	231	222	216	182	176	169
MAS+gelatin	224	198	182	163	159	162
MAS+fibronectin	218	182	169	143	112	86
MAS+pronectin L	220	176	152	124	101	66
No coating	226	216	208	192	183	164
Cell adhesion rate (proportion of adherent cells (%))						
	Time(min)					
	0	5	10	15	20	30
APS	0	6.382979	14.04255	33.19149	27.65957	31.06383
APS+gelatin	0	2.830189	13.20755	31.60377	26.41509	13.67925
APS+fibronectin	0	13.53712	20.08734	42.35808	56.33188	62.8821
APS+pronectin L	0	33.85214	50.97276	63.42412	72.37354	81.71206
PLL	0	4.329004	11.25541	29.87013	27.27273	31.16883
PLL+gelatin	0	4.587156	14.6789	30.73394	33.02752	28.44037
PLL+fibronectin	0	22.66667	28	42.66667	56.44444	64.88889
PLL+pronectin L	0	29.43925	38.31776	57.94393	64.48598	76.63551
MAS	0	3.896104	6.493506	21.21212	23.80952	26.83983
MAS+gelatin	0	11.60714	18.75	27.23214	29.01786	27.67857
MAS+fibronectin	0	16.51376	22.47706	34.40367	48.62385	60.55046
MAS+pronectin L	0	20	30.90909	43.63636	54.09091	70
No coating	0	4.424779	7.964602	15.04425	19.02655	27.43363

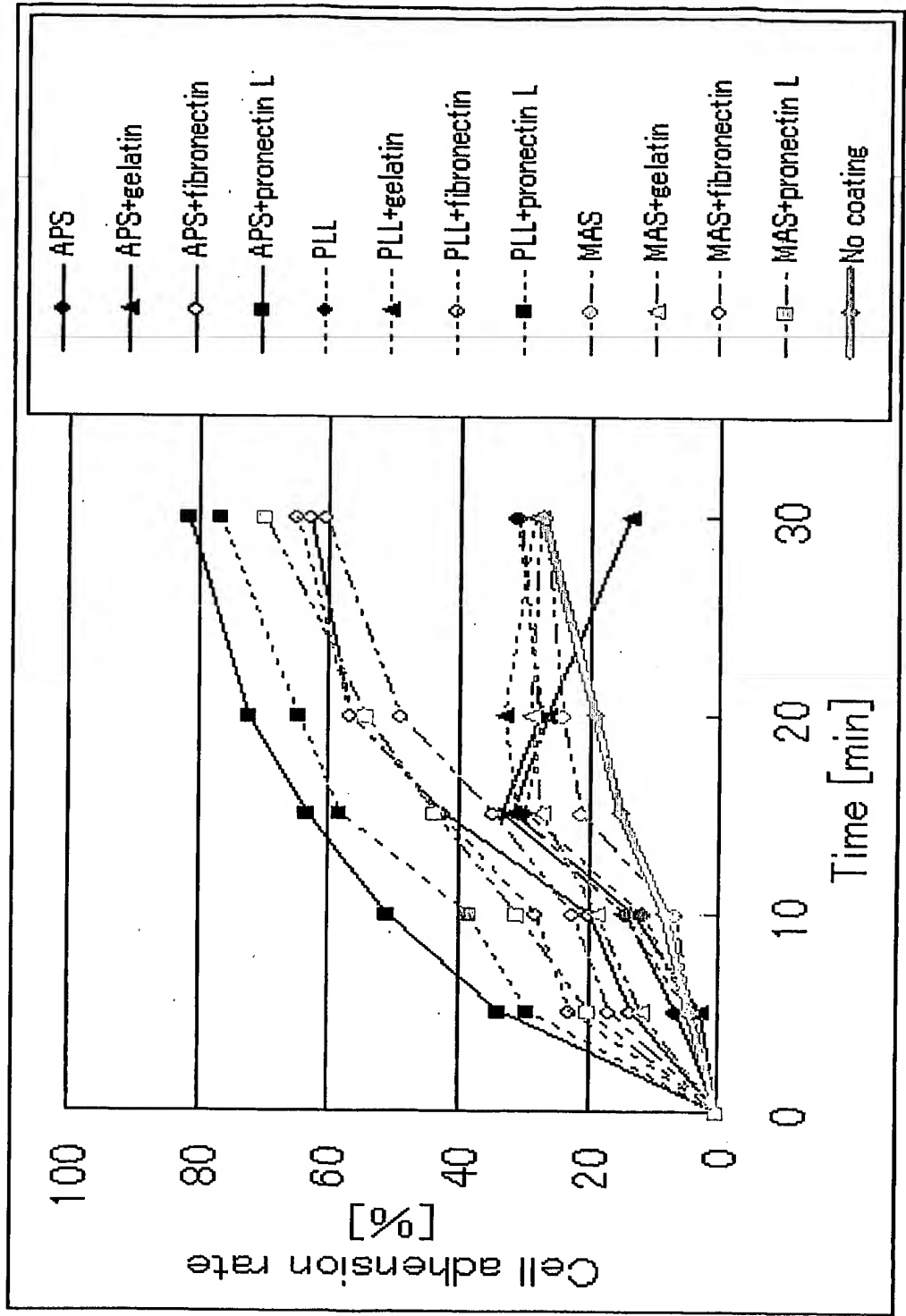
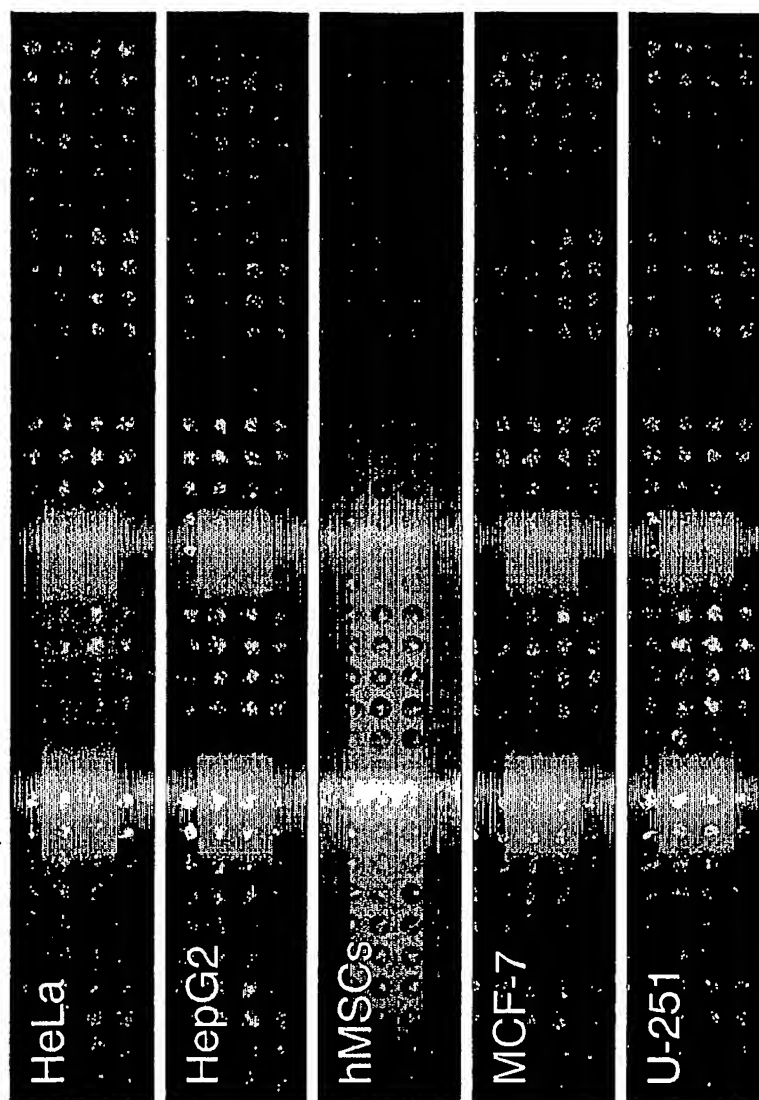
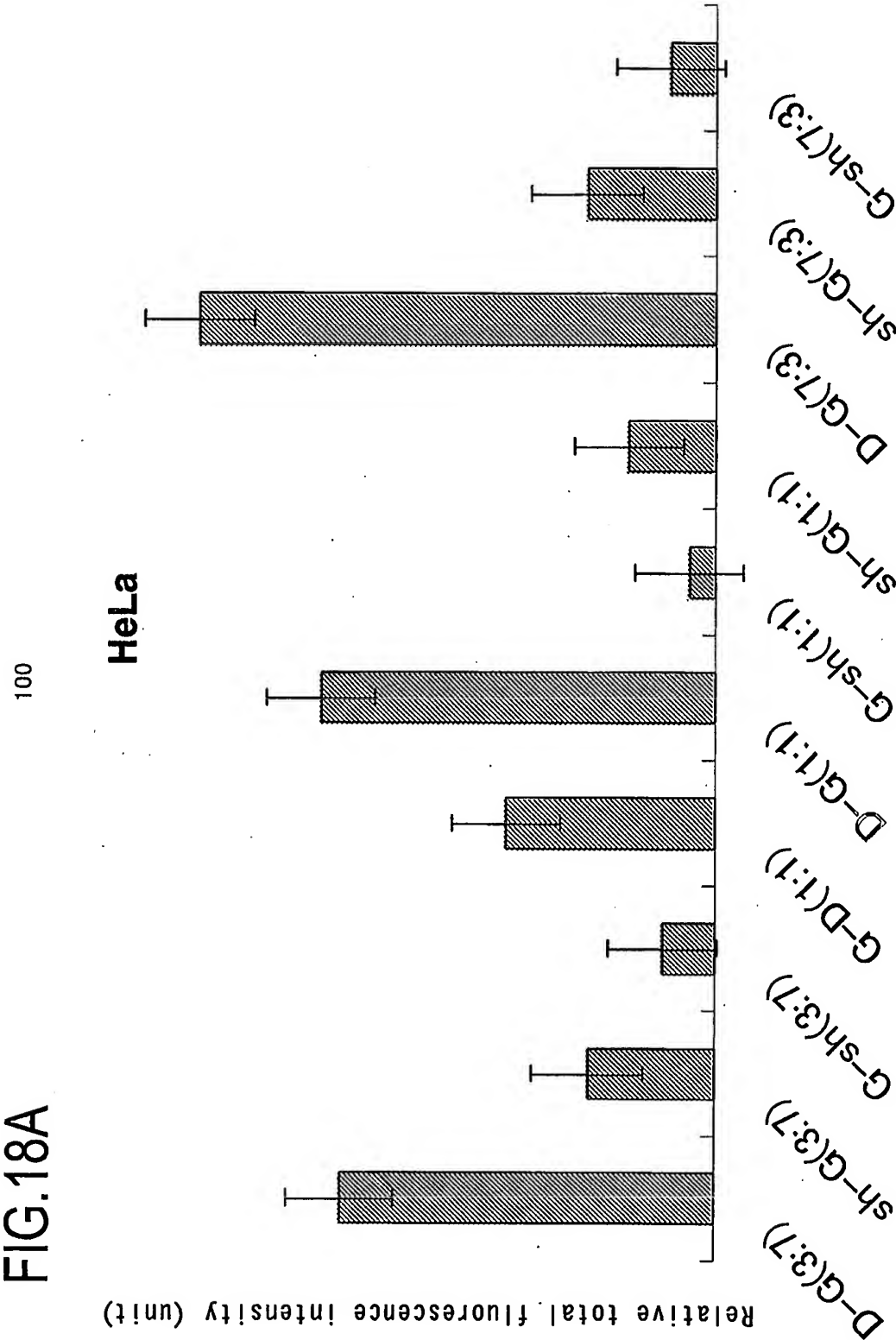


FIG.16D

21/35

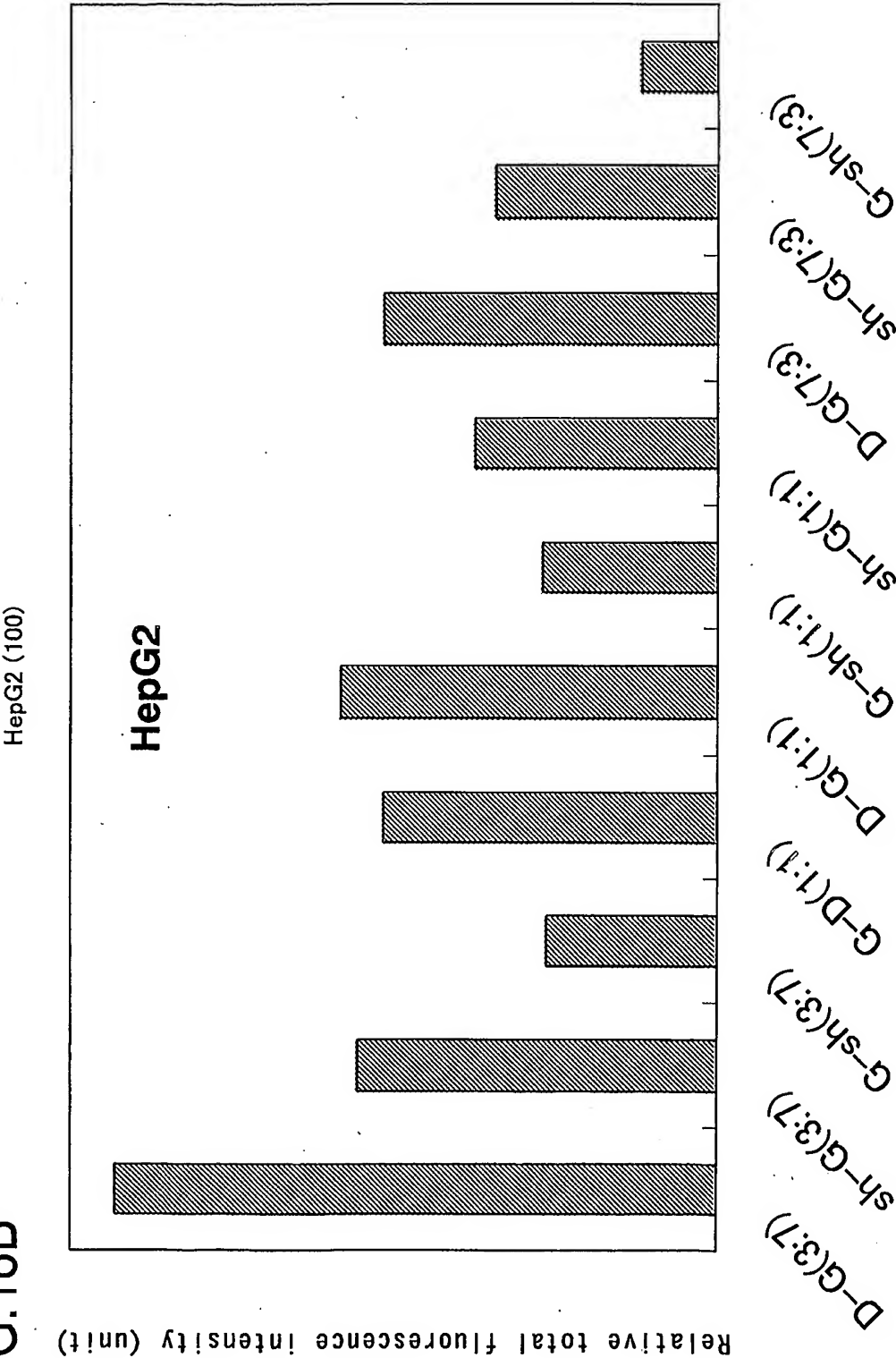
FIG.17

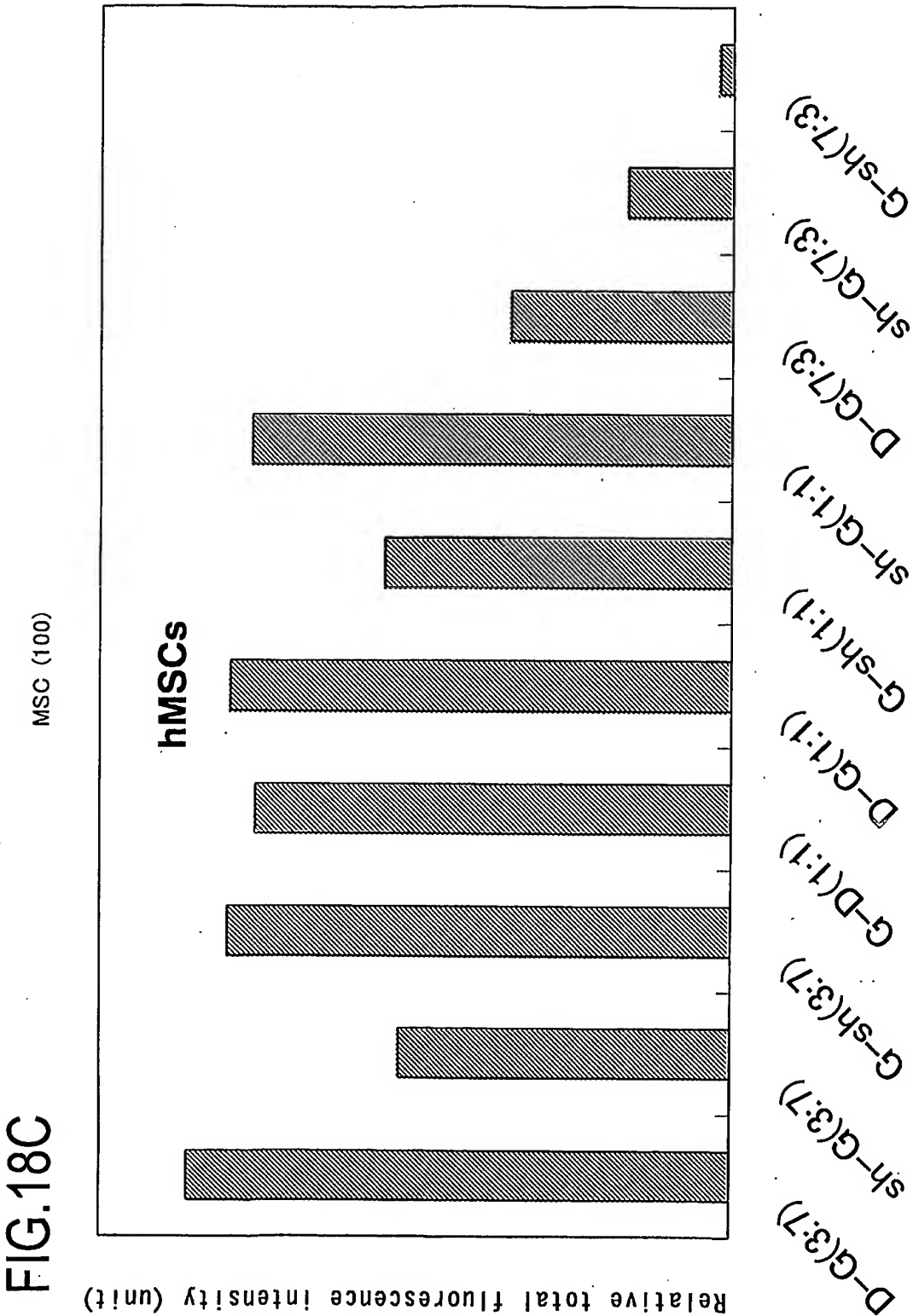




23/35

FIG.18B





25/35

FIG.18D

MCF7 (100)

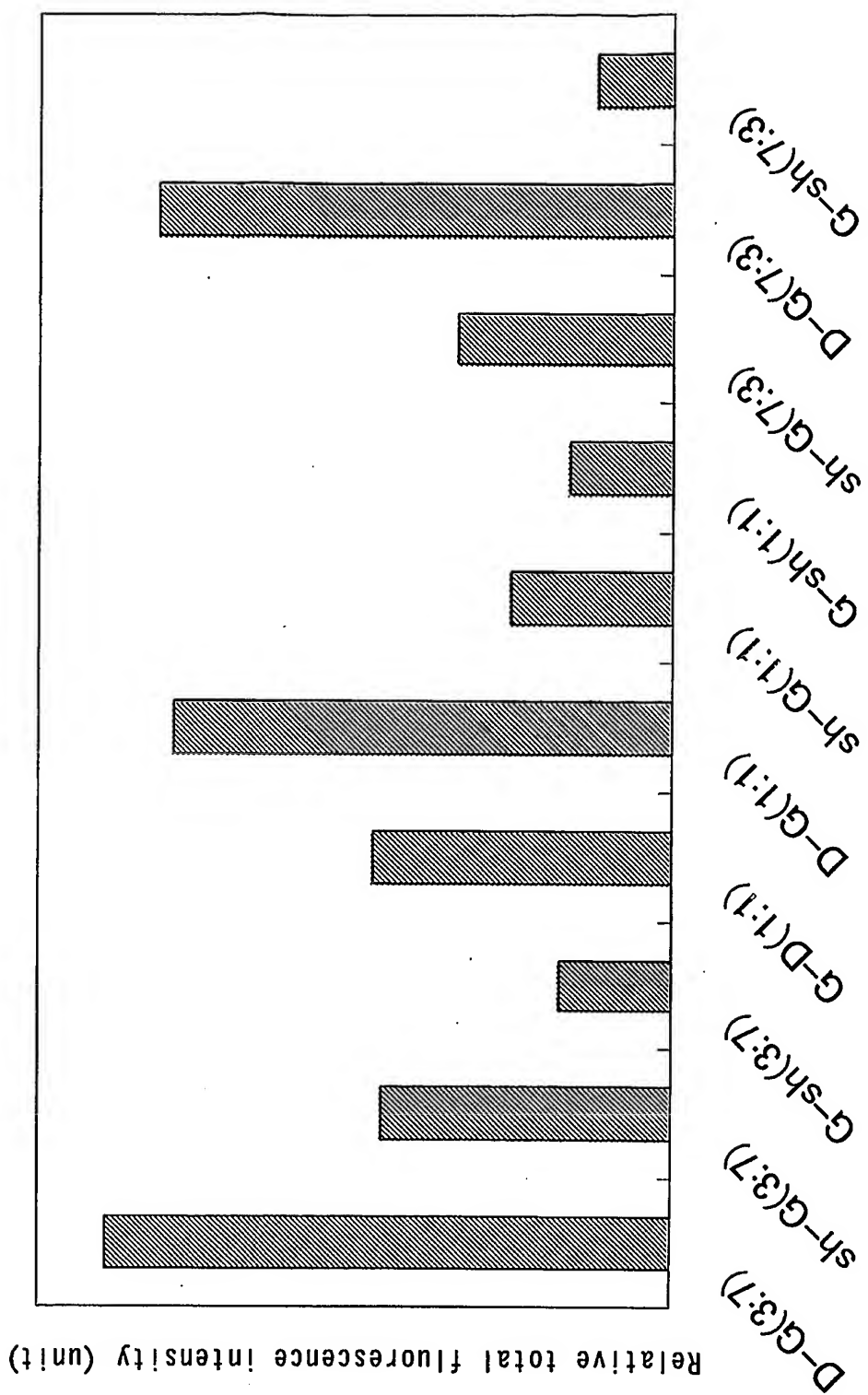


FIG.18E U251 (100)

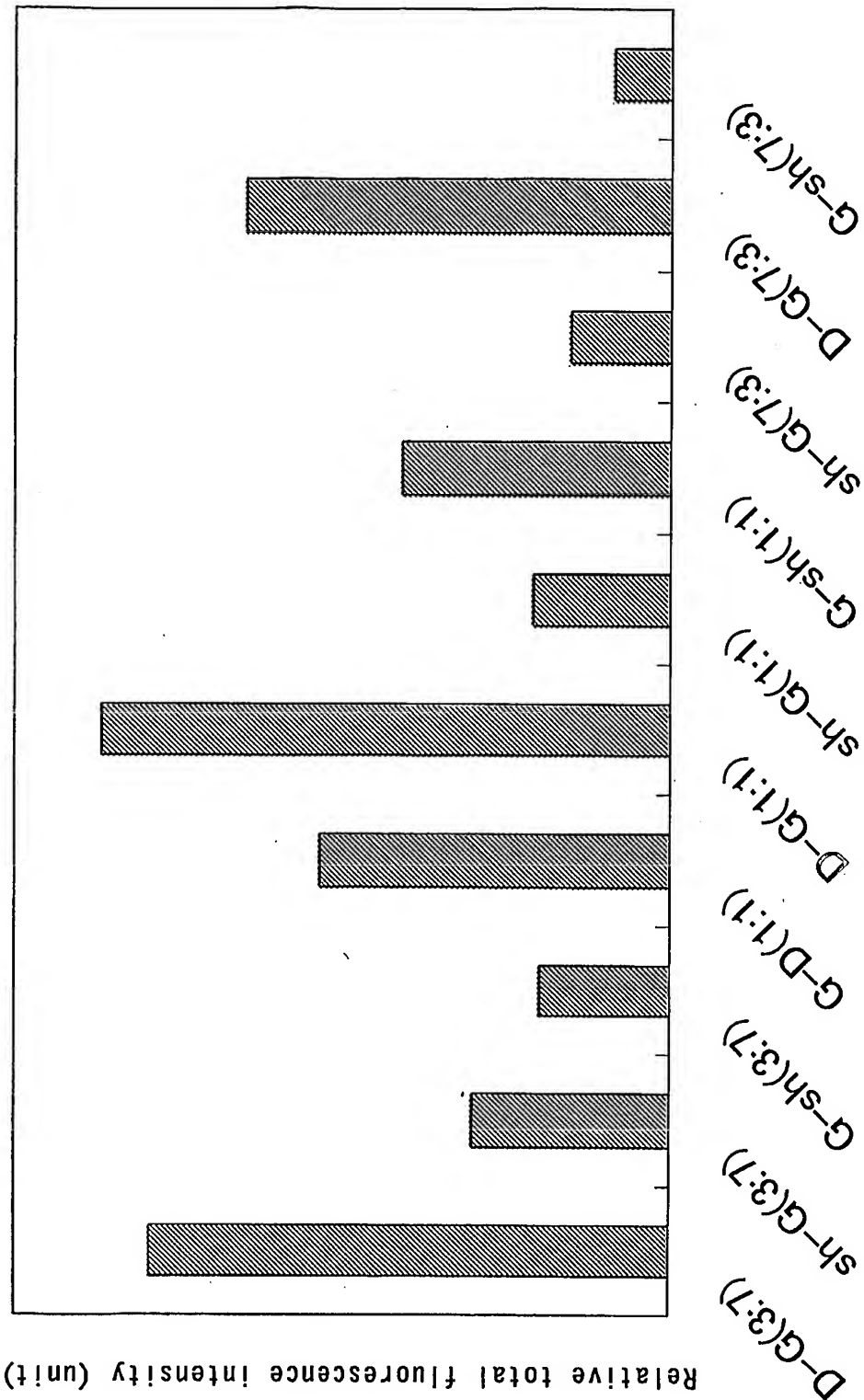
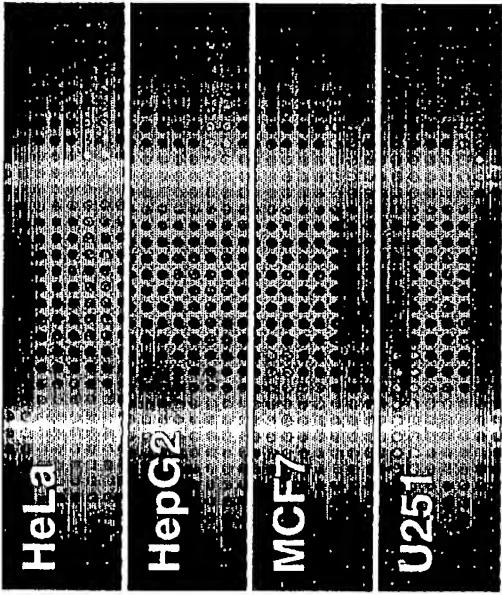
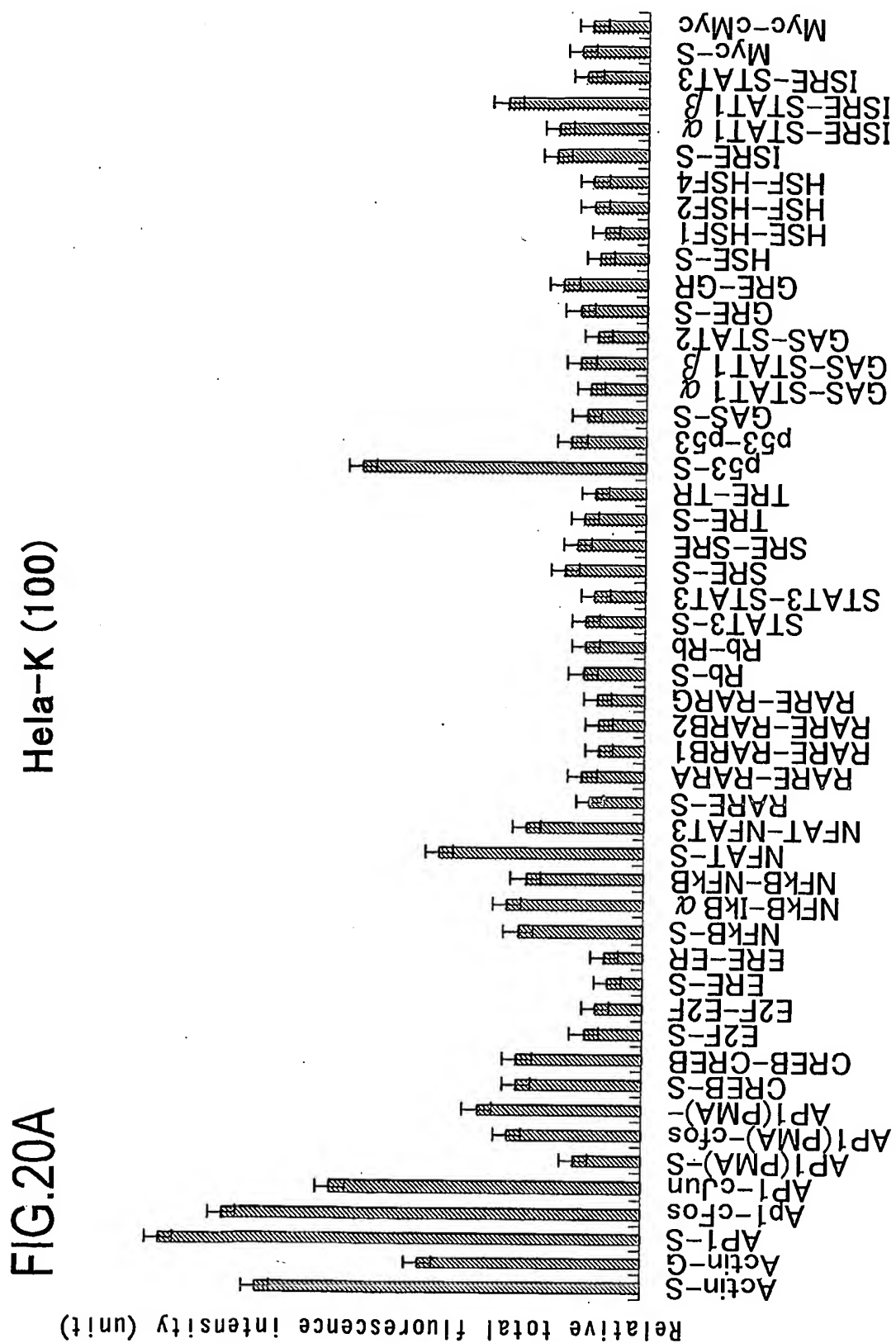


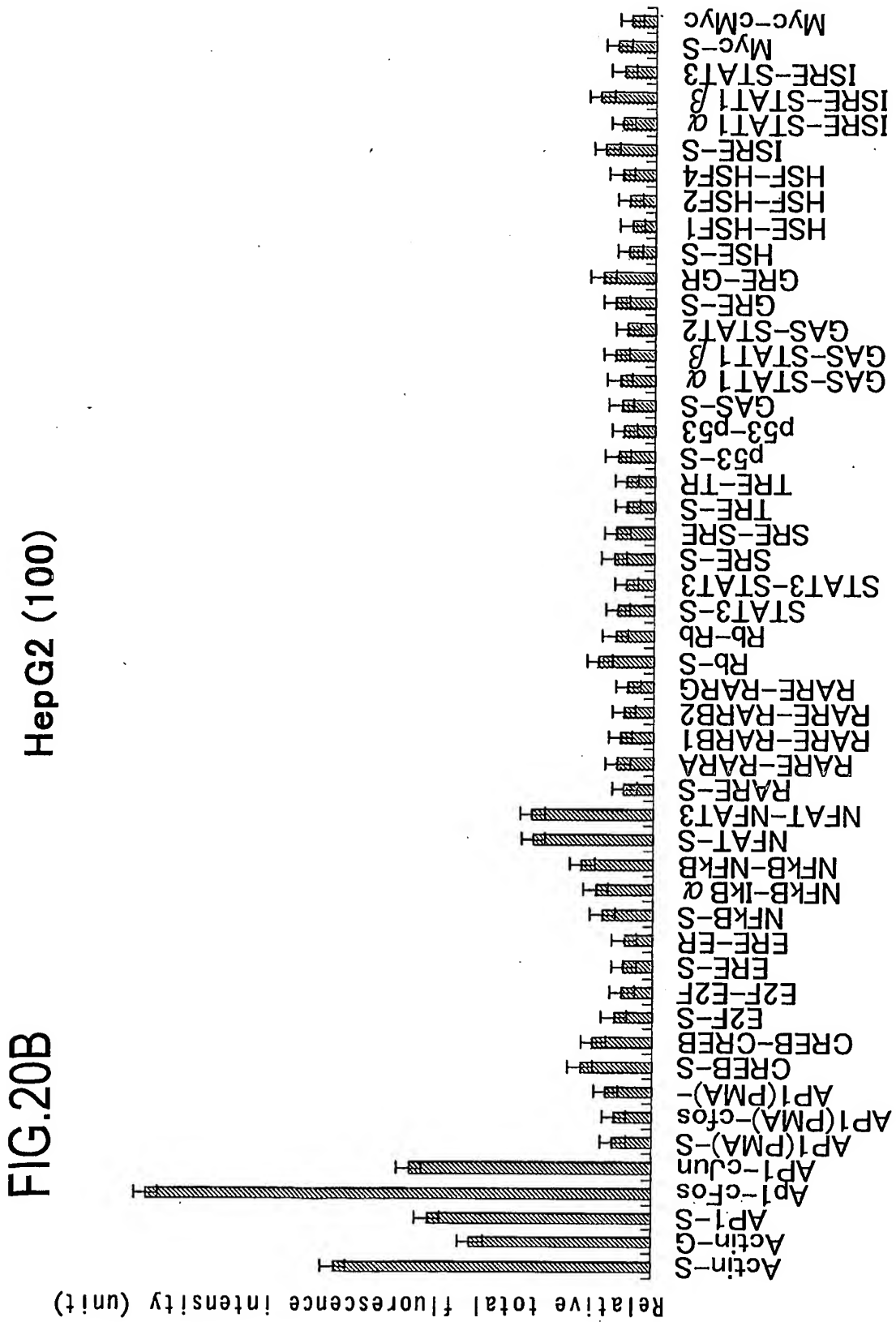
FIG.19



28/35



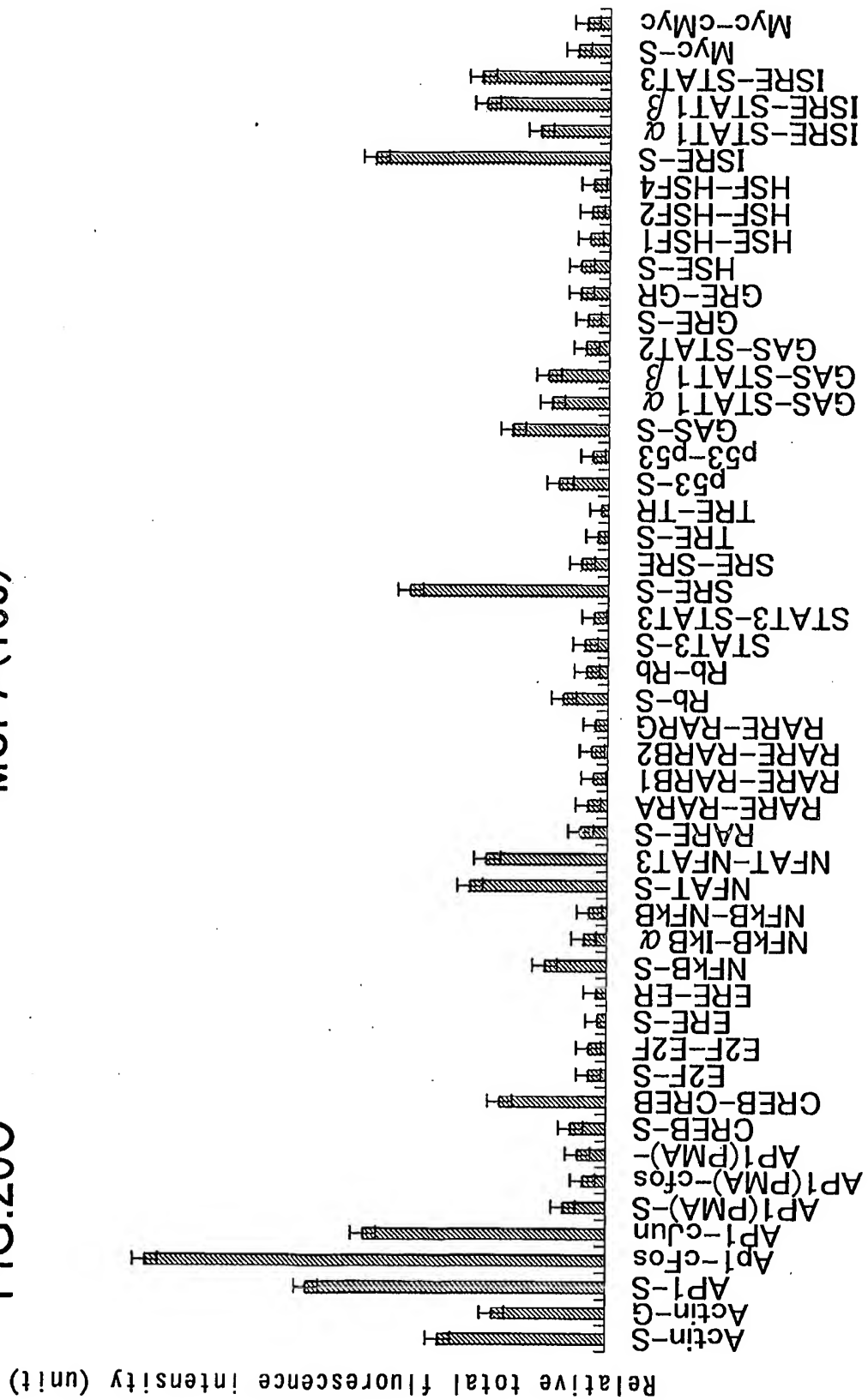
29/35



30/35

MCF7 (100)

FIG.20C

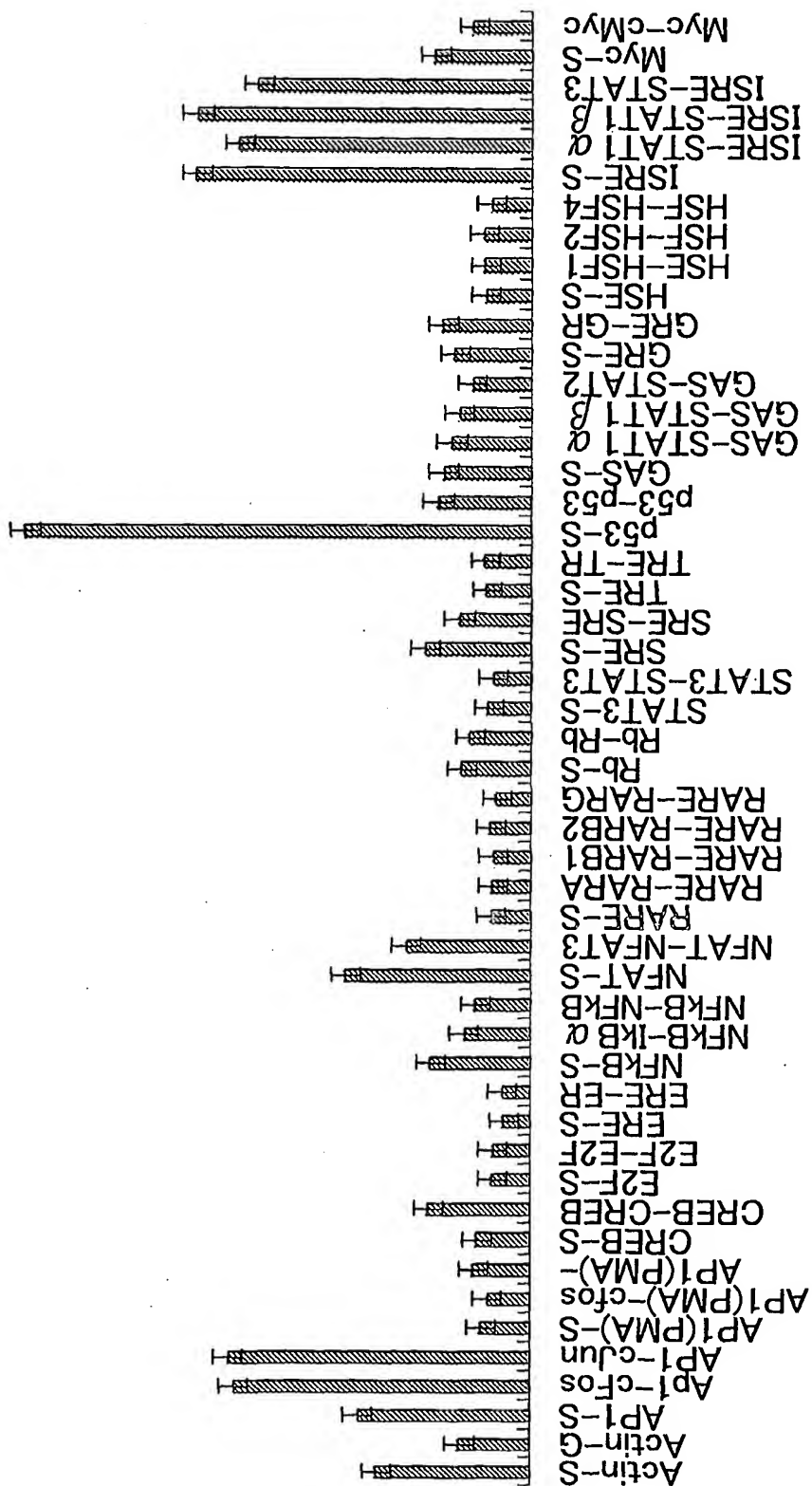


31/35

FIG.20D

Relative total fluorescence intensity (unit)

U251 (100)



32/35

FIG.21

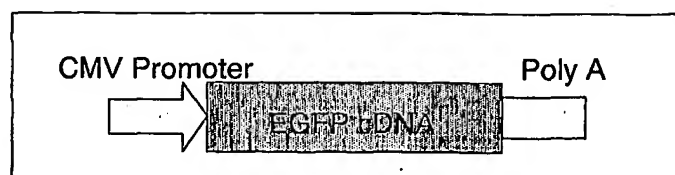
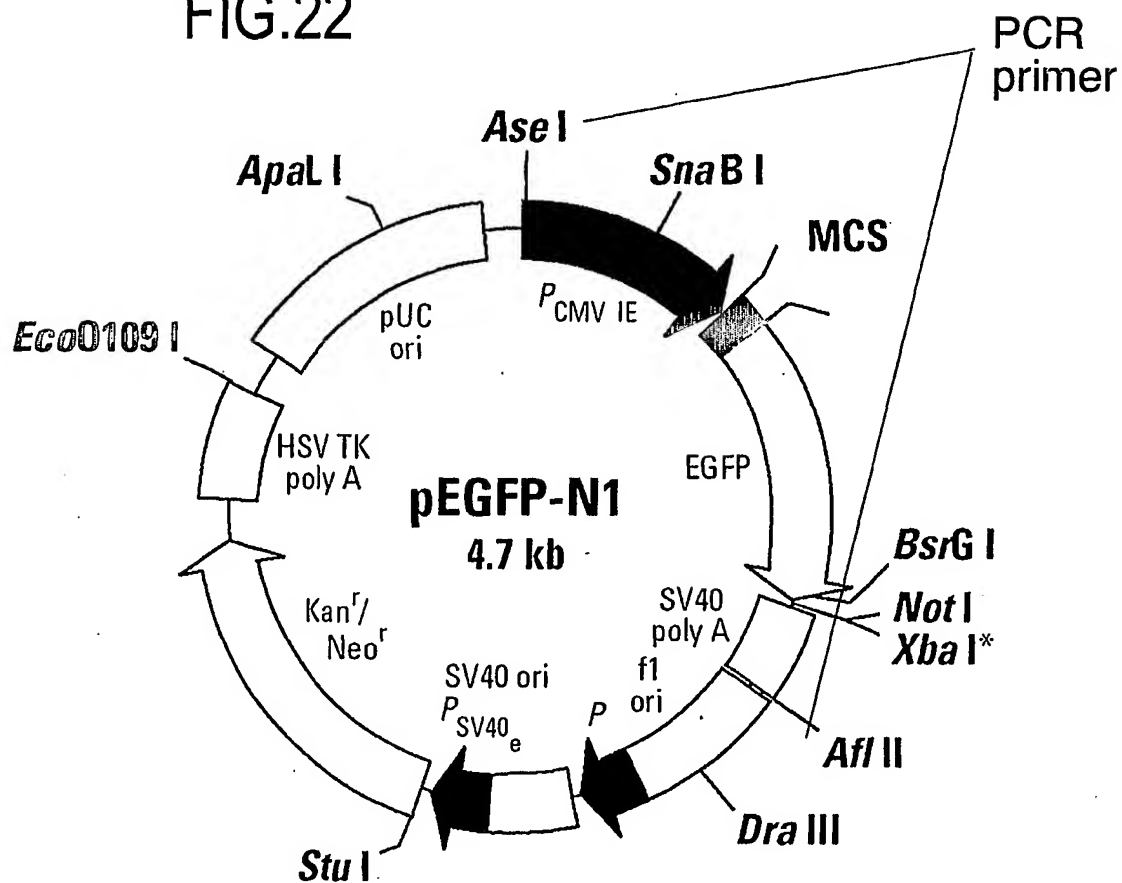


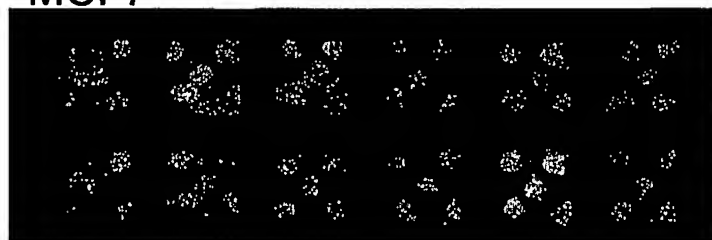
FIG.22



33/35

FIG.23

MCF7



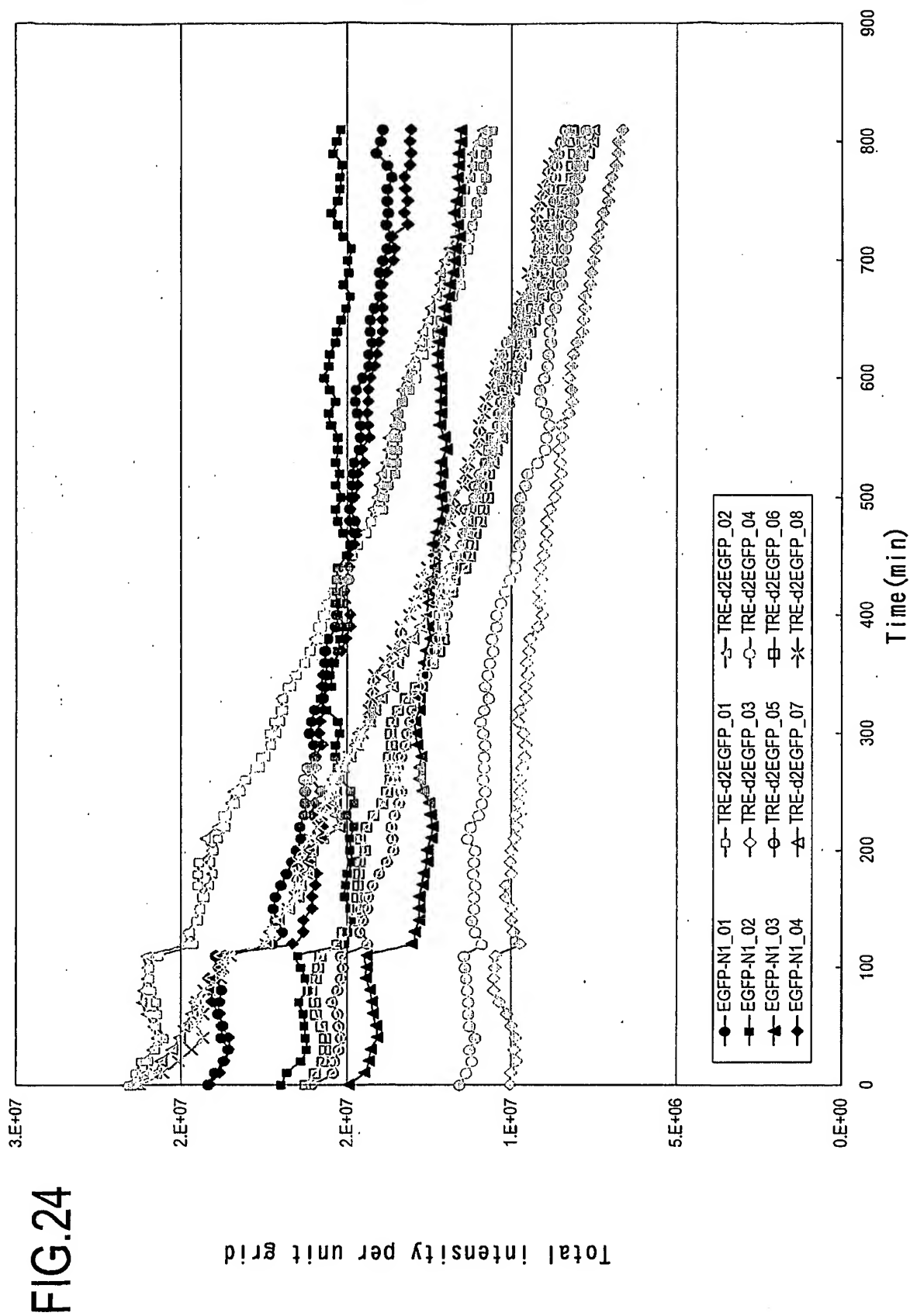
Circular DNA

PCR Fragment

pEGFP-N1

EGFP expression unit

34/35



35/35

